

**909.08 Anchor Bolts for Traffic Signals, Highway Lighting, and Signs.** Anchor bolts for traffic signals, highway lighting, and signs shall conform to F 1554, Grade 55 S1. Anchor bolts shall be galvanized for the full length of the threads and 3 in. below the threads in conformance with A 153. Nuts shall be hex nuts conforming to A 194, Grade 2H or A 563 Gr DH. Flat washers shall be heavy washers conforming to F 436. All hardware shall be galvanized in conformance with A 153.

**909.09 CAST WASHERS.** Cast washers, ogee washers, and special cast washers shall conform to A 47. Cast washers shall be hot dip galvanized. The coating shall conform to the thickness, adherence, and quality requirements of A 153.

**909.10 HARDWARE.** Spikes, wood screws, staples, brads, lag screws, carriage bolts, and other parts under the general heading of HARDWARE shall be composed of carbon steel and shall conform to Federal Specification FF-N-105.

**909.11 STEEL FORMS.** Steel bridge deck forms and deck form supports which remain in place shall be fabricated from steel conforming to A 653, Designation SS, Grades 33 through 80, Coating Designation G 165. The minimum thickness of uncoated steel shall be 0.0359 in.

## SECTION 910 — BEARINGS

**910.00 CERTIFICATION.** The bearing producer shall furnish certification as specified in TC-1.02. The certification shall include actual mill test results. The chemical and physical properties of the finished bearings shall also be furnished by the processing manufacturer.

**910.01 BRONZE OR COPPER ALLOY BEARING AND EXPANSION PLATES.** Bronze or copper alloy plates shall be either of cast bronze or rolled copper alloy.

**910.01.01 Cast Bronze.** Cast bronze bearing and expansion plates shall conform to B 22, Alloy No. 91100 or No. 91300.

Self-lubricating bronze bearing plates shall be an article of standard production by an approved manufacturer of such equipment. They shall be provided with trepanned recesses (not grooves) that shall be filled with a lubricating compound consisting of graphite and metallic substances with a lubricating binder capable of withstanding the atmospheric elements. The lubrication compound shall be compressed into the recesses by pressure to form dense, nonplastic lubricating inserts. The

lubricating area shall comprise not less than 25 percent of the total area. The static coefficient of friction shall not exceed 0.10.

The certification shall be as specified above and shall include the actual test results showing that bearing plates of the same design as those supplied conform to the static coefficient of friction requirements.

Test specimens shall measure not less than 4 in. long by 4 in. wide. The static coefficient of friction shall be determined by testing a specimen plate subjected to a vertical pressure of 1000 psi and 1000 cycles consisting of 1/2 in. horizontal strokes at a speed not to exceed 9 cycles per minute. Testing shall be conducted at an ambient temperature of  $77 \pm 9$  F. The static coefficient of friction on the specimen bearing plate shall be calculated by dividing the total applied vertical load on the plate into the total horizontal load required to start motion between the bearing plate and its mating surface while subject to the vertical load. Upon completion of the test, the bronze plate shall show no signs of galling.

**910.01.02 Rolled Copper.** Rolled copper alloy bearing and expansion plates shall conform to B 100, Alloy No. 51000.

**910.02 STRUCTURAL BEARING PADS.** The manufacturer shall furnish certification as specified in TC-1.02.

**910.02.01 Elastomeric Pads.** Elastomeric bearing pads shall conform to the material requirements described in the AASHTO Standard Specifications for Highway Bridges. The elastomeric bearing shall be 60 durometer hardness, Shore Type A. Accompanying the certificate for elastomeric bearing pads shall be two standard ASTM tensile slabs molded from the same compound batch as the furnished elastomeric bearings.

The static load deflection of any layer of elastomeric bearing pads shall not exceed seven percent at 800 psi average unit pressure when tested under laboratory conditions.

The design load for the elastomeric bearing pads will be specified in the Contract Documents. The manufacturer shall proof load each steel reinforced bearing design with a compressive load of 1.5 times the maximum design load and shall specify that the material conforms to the material certification.

When test specimens are cut from an actual bearing pad, a reduction of 10 percent in the minimum requirements for original tensile strength and ultimate elongation will be required.

**910.02.02 Self-Lubricating Bearing Assembly.** Self lubricating bearing assembly shall consist of a fabric reinforced elastomeric pad, Tetrafluoroethylene (TFE) bonded to the pad, and a stainless steel sheet. All the elements shall conform to AASHTO Standard Specifications for Highway Bridges as modified herein.

Fabric reinforced elastomeric pad shall be Type A, durometer hardness of 70 to 90. Stainless steel sheet shall be Type 304, minimum thickness of 16 gauge. The surface of the stainless steel sheet in contact with TFE shall have 2B finish, and shall be welded to the sole plate using a welding procedure approved by the Engineer.

**910.02.03 Preformed Fabric Pads for General Application.** Preformed fabric pads shall be composed of multiple layers of 8 oz cotton duck impregnated and bound with high quality natural rubber or of equally suitable materials, approved by the Engineer and compressed into resilient pads of uniform thickness, after compression and vulcanizing. The finished pads shall withstand compression loads perpendicular to the plane of the laminations of not less than 10 000 psi without detrimental reduction in thickness or extrusion.

## SECTION 911 — JOINTS

**911.01 JOINT SEALER AND CRACK FILLER.** Joint sealer and crack filler shall conform to D 3405 as modified by MSMT 404. The manufacturer shall furnish certification as specified in TC-1.02. Manufacturer's recommendations regarding heating and pouring temperatures will be used when testing these materials. If a range of temperatures is recommended, the midpoint will be used as the pour point.

**911.01.01 Silicone Joint Sealer And Crack Filler.** Silicone joint sealer and crack filler shall be low modulus, one component compound which may or may not require a primer for bonding to concrete. If a primer is required, it shall be as recommended by the sealant manufacturer and shall be placed on the joint faces following the insertion of the backup material.

Silicone material, when tested at  $73 \pm 3$  F and 45 to 55 relative humidity, shall conform to the following: